

SOIL SURVEY OF ADAMS COUNTY, MISSISSIPPI.

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DESCRIPTION OF THE AREA.

Adams County is situated in the southwestern part of Mississippi and is bounded on the north by Jefferson County, on the east by Franklin County, on the south by Wilkinson County, and on the west by the Mississippi River, which separates it from Concordia Parish, La. It lies between 31° and 32° north latitude and 91° and 92° west longitude. The county comprises an area of approximately 444 square miles, or 284,160 acres, and the soils, crops, and agricultural practices are representative of an extensive area in southwestern Mississippi.

The surface features naturally fall into two divisions—the "Delta," or river bottom, section and the "Hill" section. The line separating these divisions consists of a chain of steep bluffs rising from 75 to 200 feet above the level of the delta. The bluffs

touch the river for a short distance below Fairchilds Island, again at Natchez for about 4 miles, and a third time at Ellis Cliffs, near Hutchings Landing. About 20 per cent of the area of the county

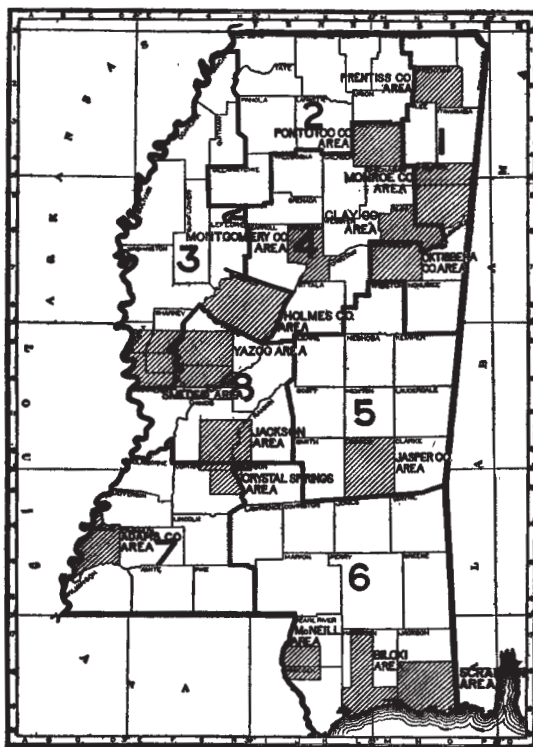


FIG. 18.—Sketch map showing location of the Adams County area, Mississippi.

is formed by the delta, which is most extensive in the southwestern corner between the Mississippi and Homochitto Rivers. Between Natchez and Hutchings Landing is a stretch of bottom land comprising about 12,000 acres, while Cow Pen Point, north of Natchez, has an area of 8 square miles. A fourth bottom lies in the extreme north end of the county, along an old river channel. The Government has never constructed levees on account of the small extent of the bottoms, and the entire delta in this county is subject to overflow from the Mississippi River once or twice each year.

The drainage of the entire area is into the Mississippi River. The Homochitto River, which forms the southern boundary, empties into the Mississippi about 45 miles below Natchez. It receives the waters from Sandy, Second, Wells, and several other smaller creeks which drain the southern half of the area. St. Catherines Creek, which reaches the Mississippi a few miles south of Natchez, drains considerable territory to the south and east of the city. Coles Creek traverses the northeast corner, while Fairchilds Creek forms part of the northern boundary line of the county.

The delta is nearly flat, with only a gentle decline from the foot of the bluffs to the swamp and also from the river front toward the swamp. The land along the river frequently forms low ridges parallel with the stream. In the uplands the surface varies from nearly level to rough, hilly, and broken. Along the creeks are level bottoms with undulating areas adjoining. A large proportion of the upland, however, is rolling to broken. The most striking topographic features are the erosion forms upon the slopes of some of the hills, which have been so dissected and eroded as to present the appearance of a mountain region in miniature. Several large "gulfs," or erosions, with perpendicular walls, may be seen directly south of Natchez. The general elevation of the upland is 250 to 300 feet above sea level, while the delta lies from 75 to 80 feet above the sea.

The first settlement was made in the county when Fort Rosalie was built on the present site of Natchez by the French in 1716. The French retained possession of the country until 1763, when it was ceded to the English. In 1779 Spain gained control of this territory and held possession until 1797, when American troops marched into Natchez and raised the first American flag. Natchez was the capital of the territory until 1803, when it was moved to Washington, about 6 miles east, where it remained until 1818.

Under the British rule the county was settled quite extensively, the emigrants coming chiefly from the Carolinas, Virginia, New Jersey, and New England. All portions of the area, with the exception of the swamp and the extremely broken sections of the upland, have been

well settled, but since the coming of the boll weevil there has been an exodus of the colored people, and large tracts of land have been abandoned. The population as given by the census of 1900 was 30,111, of which about 78 per cent was colored.

Natchez, which is situated on the bluffs overlooking the Mississippi River, is a place of great historic interest. It was long the center of wealth, culture, and business enterprise when the Mississippi River was the main avenue of commerce. The first steamboat reached this port in 1811. By 1822 shipping had greatly increased, and hundreds of boats loaded with the produce from upriver States lined the landing for half a mile. In 1837-38, 41,500 bales of cotton were shipped from Natchez. The city now has a population of about 16,000, is the seat of government of Adams County, and the principal business center of a large territory. Fenwick, Cranfield, Turner, Foster, and Stanton are other shipping points within the area.

Three railroads enter the county, providing excellent transportation facilities. A branch of the Yazoo & Mississippi Valley extends from Natchez to Jackson, where it connects with the main line of the Illinois Central. At Hattiesburg it connects with the main line of the Yazoo & Mississippi Valley line, which runs from New Orleans to Memphis. The Mississippi Central extends from Natchez to Hattiesburg, where it connects with the Queen & Crescent route. The New Orleans & Northwestern ferries its trains across the river from Vidalia, La., and has regular train service out of Natchez. The distance by rail from Natchez to Jackson is 98 miles, to New Orleans 214 miles, and to Memphis, Tenn., 217 miles. The river also furnishes an excellent route for shipping, but at present only a comparatively small tonnage is carried by water. Ocean vessels can ascend the river without difficulty. The public roads of the county are piked and kept in excellent condition.

Natchez is a cotton center, and two large cotton mills are located here. A canning factory was opened in 1909 and a meat-packing plant is under construction. Other industries are being attracted to this place by the advantages offered. The city furnishes a limited market for truck and general farm produce, but most of the truck crops are shipped to the northern markets.

CLIMATE.

The following table gives the normal monthly, seasonal, and annual temperature and precipitation of the region as recorded by the Weather Bureau at Natchez, Miss., together with the dates of the last killing frost in spring and the first killing frost in fall:

Normal monthly, seasonal, and annual temperatures and precipitation at Natchez.

Month.	Temperature.			Precipitation.		
	Mean.	Absolute maximum.	Absolute minimum.	Mean.	Total amount for the driest year.	Total amount for the wettest year.
	^{° F.}	^{° F.}	^{° F.}	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>
December.....	50	80	11	3.1	9.7	3.5
January.....	49	83	7	5.4	11.0	2.8
February.....	52	82	2	5.3	2.4	7.7
Winter.....	50			13.8	23.1	14.0
March.....	61	90	23	6.4	4.2	4.0
April.....	67	92	35	4.6	1.8	19.2
May.....	74	95	43	2.7	0.0	1.5
Spring.....	67			13.7	6.0	24.7
June.....	80	99	51	4.4	4.0	5.5
July.....	82	105	61	5.4	2.5	6.9
August.....	82	101	53	5.2	1.6	1.0
Summer.....	81			15.0	8.1	13.4
September.....	77	100	46	2.3	1.2	1.8
October.....	67	96	30	2.4	1.2	2.8
November.....	58	88	23	3.3	2.6	8.2
Fall.....	67			8.0	5.0	12.8
Annual.....	66	105	2	50.5	42.2	64.9

Average date of first killing frost in fall, November 14; of last in spring, March 14. Date of earliest killing frost in autumn, October 27; of latest in spring, March 30.

It will be observed that the normal temperature for winter is 50°, spring 67°, summer 81°, and fall 67°, and that the mean annual is 66° F. The mean annual precipitation of 50½ inches is fairly well distributed throughout the year.

The climate is healthful, especially in the upland section, which is about 200 feet higher than the Delta. The winters are mild and short, and the summers are long and warm. The average date of the last killing frost in the spring is March 14 and the first in the fall is November 14, giving a period of eight months during which the most tender vegetation may grow without danger of injury from freezing.

AGRICULTURE.

The first plantations, in what is now Adams County were opened up along St. Catherines Creek in 1718, but very little progress was made in agriculture during the French rule, which extended to 1763. Those who had come to this locality prior to this date were of a class not suited to agricultural pursuits and cared more for the chase and traffic with the Indians than for the cultivation of the soil. Under the French regime scarcely enough was produced to supply the needs of the settlements in this region.

When the British gained possession of this territory in 1763 a more systematic effort was made to develop agriculture. The immigration which ensued with the change of rulers was chiefly from the Carolinas, Virginia, New Jersey, and New England, and the settlers of a class essentially different in habits from their more restless predecessors. Many of these people were accustomed to farming, and being accompanied by their families resorted at once to the tilling of the soil as a means of support. Their methods of cultivation were crude and their implements few and imperfect, yet the products were varied and ample for subsistence. Nearly every staple of necessity which the soil could produce was grown. Corn, wheat, rye, barley, rice, potatoes, cotton, flax, tobacco, and indigo were all cultivated to some extent, but at this early period none of these were grown for export.

From the earliest occupancy of the English sufficient cotton was grown for domestic purposes. It was the black or naked seed variety, planted in hills and cultivated with the hoe, and the seed picked by hand or separated from the lint by a small roller gin. The cotton was spun and woven at home. The small quantity of indigo then grown and the dyestuffs afforded by the forest supplied all of the coloring materials required for dyeing cloth. Flax was grown and spun for thread and in some instances linen cloth was made.

Cattle and swine required little attention other than protection from wild animals and were raised in comparatively large numbers. The garrison at Natchez offered the chief market, though some were driven to New Orleans.

When this territory came under the dominion of Spain, in 1779, a market was opened in New Orleans and trade in tobacco established. Tobacco thus became the first marketable staple of this region, as well as of all Mississippi, and it soon came into general cultivation. Monopoly of this trade was retained by the King of Spain and, as there was no grading, the price for all that passed inspection was uniform. The price was considered liberal, the yields sufficient to insure good returns, and the market stable. These conditions encouraged an increased production and the country soon became prosperous. This state of affairs, however, was of comparatively short

duration, for tobacco from Kentucky was brought to New Orleans and sold by contract to the Spanish authorities at a price much lower than previously paid, the patronage of the King was withdrawn, and further cultivation in Mississippi for exportation was discontinued.

The tobacco crop being no longer profitable, cultivation of indigo increased. The price obtained for the best quality ranged from \$1 to \$2 per pound, and, though profitable, the disagreeable features in handling the crop caused its ultimate abandonment.

The production of tobacco and indigo having been discontinued, more attention was paid to growing cotton. Early reports state that cotton was grown in the gardens in Natchez as early as 1721; but very little, if any, was grown for export during the French, English, or Spanish rule. Cotton was probably introduced from Santo Domingo by the French. The variety had smooth, black, naked seeds and was grown until 1806, when Mexican cotton was introduced and cultivated more successfully. From this as a foundation stock most of the varieties now in favor have been developed. The acreage was limited, owing to the difficulty of separating the lint from the seed. The dawn of a new era in agriculture was at hand when Eli Whitney invented his cotton gin, the first patent being obtained in 1794. In 1795 a gin was introduced into Mississippi and by 1797 cotton was the dominant crop of the Natchez district.

From the introduction of the cotton gin to the present time cotton has been the most important agricultural product. The reasons for this are that there has always been a cash market for this staple, the yields have been such that profitable returns were secured, and the labor early becoming accustomed to handling this crop has since always given it preference. Under normal conditions the average crop for Adams County is about 22,000 bales, or one-half bale per acre.

Corn has been grown along with cotton since the earliest settlement of the county, though never so extensively. Prior to the Civil War nearly every plantation produced sufficient corn for its own use and, as a whole, this region supplied itself with corn. For a long period following the war and extending up to the present time, large quantities of corn, hay, and other feed stuffs have been shipped into Natchez every year, and it is not an uncommon thing to see teams hauling hay and corn from Natchez to the plantations in various parts of the county. The average production of corn is about 250,000 bushels per year, or 15 bushels per acre. Some oats, cowpeas, and sorghum are grown as general farm crops.

There are several dairy herds near Natchez, but the dairy industry has not been developed to any extent. While there are a number of good cattle in the county, generally speaking, stock is of inferior

grade. The hogs have been improved more than any other live stock, but there are still many of the "razor-back" variety. Duroc-Jerseys are being used quite extensively to grade up the common stock. Only a few sheep and goats are raised.

With the few exceptions to be mentioned later, the type of agriculture which has been followed in this region for a long period of years and which is still practiced by the great majority is such as tends to deplete the soil by robbing it of its organic matter; permitting it to be bare for long periods each year, thereby allowing the fields to erode and be cut up with unsightly ravines and gullies. It is customary to plow very shallow—not more than 3 or 4 inches—throwing the land into ridges which are harrowed with a one-horse cultivator or a light two-horse harrow and cotton or corn planted on these ridges. The aftercultivation given these crops is often not sufficient to kill the grass and weeds nor to conserve properly the moisture supply. Cow-peas are frequently sown in the corn at the last cultivation.

The adaptation of soils to certain crops has received comparatively little consideration until recently, when it became evident that a change of system would be necessary. It has been customary to raise cotton or corn upon the same field year after year, returning little if any humus-forming material to the soil. The land has stood the abuse remarkably well, but large tracts have been abandoned and allowed to wash. Many of these eroded fields could be readily reclaimed, as the soil is capable of being built up with but little labor and expense.

The old methods are no longer adapted to conditions, for the agriculture is in a transitory state. The change taking place owes its inception to the Mexican boll weevil, which made its appearance in this locality in 1908. That year's cotton crop was almost entirely destroyed, as was also the crop of 1909. The failure of so important a staple worked great havoc with all lines of business, as well as with the labor.

The land of this county has always been held in large estates and most of the owners have lived in Natchez, renting out their places in small tracts to colored tenants and usually having an overseer in general charge. When the landowner furnished stock and tools the crop was usually equally divided; when the tenant furnished these things he sometimes paid one-third of the crop as share rent or a stipulated number of bales of cotton for the land cultivated. The tenant would secure advances of supplies from the local merchant and pay for them with cotton in the fall when the crop was harvested. Sometimes the landowner was also the storekeeper, but in any case after rent and supplies were paid for there would be little left with which the tenant could begin another year. Under this system the landowners received very good interest on the valuation of their

property, were contented and satisfied with conditions, and paid no attention to the building up of the soil or to the diversification of crops. As a result, when the boll weevil came and the cotton was destroyed, no one was prepared to meet the situation. On account of the risk now involved in putting out cotton the merchant will no longer make advances, and this makes it especially difficult to follow the system formerly found satisfactory. The colored labor is very much afraid of the weevil, and as a result it is estimated that fully half of the colored population of Adams County has left within the past two years, going chiefly to points in the delta above Vicksburg, where the boll weevil has not as yet made its appearance.

To meet the new conditions people now realize that it will be necessary to grow other crops than cotton and to improve upon the old methods of farming. The most important step which has been taken in this direction is along the line of trucking, though a small beginning had been made before the weevil appeared. The most extensive developments have taken place in the vicinity of Foster, a small station about 6 miles northeast of Natchez, on the Yazoo & Mississippi Valley Railroad. Five years ago 1 carload of cabbage and potatoes was shipped from this point. Last year 60 cars were shipped, and the crop of 1910 is estimated at 200 carloads. Most of the shipments are consigned to Chicago. Sales are made to buyers who come to this point and pay cash for the produce delivered at the station. Triumph potatoes and Early Wakefield cabbage are the varieties grown most extensively. The cabbage plants are sometimes started in hot beds or cold frames and transplanted to the field the last of February or the first part of March. Another method followed is to drill the seed in rows in the field and then thin the plants to a proper stand. Potatoes are usually planted from the last of January to the first part of March. As the vines develop they are hilled up with one-horse cultivators, though some of the hilling may be done with a hoe. Acid phosphate 35 parts and cottonseed meal 65 parts, or the two mixed in equal parts, form the commercial fertilizer used at present. It is applied at the rate of from 800 to 1,200 pounds per acre. The entire amount is usually put in at one application before the potatoes are planted. With cabbage several light applications may be made. Potatoes yield from 150 to 300 bushels per acre, and cabbage from 125 to 175 crates of 100 pounds each per acre. Cabbage and potatoes are usually shipped between May 10 and June 1, though the season may vary a couple of weeks.

A canning factory was opened in Natchez in 1909, and this will greatly assist in developing the trucking industry by providing a home market for tomatoes, beans, peas, etc. The company is contracting to pay \$10 per ton for tomatoes this year, which is a very liberal price. The Richland and Lintonia silt loam soils are very well

adapted to all truck crops, and portions of the Memphis silt loam may also be utilized in this way. Those engaged in trucking are very well pleased with the results attained thus far and are generally extending their acreage. The Yazoo & Mississippi Valley Railroad appreciates the opportunities which the soil offers and is cooperating with the growers by providing switches and the best facilities for handling the produce.

A \$50,000 meat-packing plant is now being erected in Natchez, and will be ready for business by this fall (1910). A ready cash market will thus be provided for cattle, sheep, and swine. The live-stock industry has already been greatly stimulated and a number of thoroughbred sheep and cattle have been purchased. Considering the mild climate, the number of grasses and forage crops that can be grown successfully here, and the fact that no section of the South produces enough meat to supply the home demand, it is very evident that there are excellent opportunities offered along the line of stock raising.

While fully one-half the colored population has left this county, the cotton acreage has been reduced about 80 per cent, so that there is still plenty of labor for all lines of farm work. The work on the truck farms is done by day laborers, the men receiving 60 cents and the women 50 cents a day and supplying their own board. Some Italians have come into this section. They seem to make good gardeners, but there is some sentiment against them and it is not likely that their number will greatly increase.

The average size of farms as given by the census of 1900 was 54.7 acres. This, however, considers each tenancy as a farm. Holdings range in size from a few acres to 15,000 acres, most of the land being held in large tracts. Only about 10 per cent of the farms are operated by the owners. A few of the large tracts have been divided and put on the market in small farms containing 20 to 120 acres. These farms can be secured at a very reasonable price, and considering the delightful climate, mild winters, the long growing season, which permits two or even three crops to be raised, and the character of soil, which can be easily worked and readily built up to a high state of productiveness, it will be seen that this section offers excellent opportunities for the extension of the trucking industry as well as for more intensive general farming.

With the exception of a small part of the swamp in the southwestern part of the county, this area has not been sectionized. Many of the deeds date back to old Spanish grants. Descriptions are by "metes and bounds" and holdings are of irregular shape. In the upland portion of the area land values are quite variable. Where trucking is carried on small tracts are held at from \$30 to \$100 an acre. The same character of land, cleared, but in old fields and more remote

from shipping points, can be bought for \$15 to \$30, while the roughest sections of the hill country range in price from \$5 to \$25 an acre.

The farm buildings throughout the county fall into two classes. Those in which the white people live are comfortable though not at all pretentious, while the cabins occupied by the colored population are as a rule in poor condition. Very few are painted, they are in poor repair, and no attempt is made to beautify the grounds. Fences are mostly of barbed wire, but only a small proportion of the fields are inclosed. As the climate is mild expensive outbuildings are not necessary, but there is usually a shelter of some kind for the stock and a shed for storing at least a part of the hay or fodder for winter use.

The delta portion of Adams County presents a peculiar and serious problem. As the delta land is not protected by a levee it is all subject to overflow once or twice each year. Formerly a late crop of cotton and corn could always be grown after the high water receded. The completion of the levees on the Louisiana side turned more of the current and flood waters to the Mississippi shore, and as a result the flood stages became higher and of longer duration. The coming of the boll weevil made a late crop of cotton impossible under present methods, and consequently nearly all of the cultivated land has been abandoned. When the Red River is divorced from the Mississippi, which question is now being agitated, the flood stages will be from 2 to 4 feet higher than at present and great damage will be done by washing away at some points and depositing sand and silt at others. Considerable damage has already been caused in this way. A condition similar to this exists in all of the Mississippi counties bordering the river below Vicksburg. The landowners have organized in an effort to have the Government pay for the damages sustained. Land values have been greatly reduced, and any of the delta land can now be purchased for considerably less than \$10 an acre.

The following suggestions and recommendations are made for the improvement of the agriculture of the county. The large holdings should be subdivided into small farms and these worked or supervised directly by the owner. The eroded fields should be plowed deeply, the washed places filled, and the land sown to Bermuda grass, which will hold the soil in place. Deeper plowing and more thorough after-cultivation should be practiced on all of the soils. For commercial fertilizer a mixture of phosphoric acid and cottonseed meal will be found to give best results on the upland soils. The growing of legumes and the plowing under of green crops will greatly assist in building up the soil.

To raise cotton in this section with the boll weevil present, early maturing, big-boll varieties such as Cleveland Big Boll, Cooks Improved, Russell's Big Boll, Triumph, and Smith's Doubleheader

should be selected. The ground should be well drained, deeply plowed, thoroughly pulverized, and the seed planted as early in April as the weather will permit. Tillage must be thorough and a good surface mulch maintained. The best commercial fertilizer is a mixture of one-third cottonseed meal and two-thirds phosphoric acid, which may be applied at the rate of from 200 to 400 pounds per acre. The success attained will depend largely upon the thoroughness of the cultivation. After the crop is gathered all stalks and trash about the field should be collected and burned and the entire farm kept as clean and neat as possible, so that there will be no place for the weevil to spend the winter. If exposed the frost will kill a great many, but some always find comfortable winter quarters and are on hand for the first bolls of cotton the next year. When it is considered that it takes but one month for a weevil to mature from the time the eggs are laid and that one pair will multiply to over 1,000,000 between May 1 and September 1, the importance of following a definite system of extermination will be realized.

More corn should be grown and more attention paid to seed selection and careful cultivation. A definite crop rotation should be followed, and from the list given, in addition to corn and cotton, those may be selected which will best suit individual conditions. For summer and fall pasture Bermuda grass has no equal. Bur clover may be sown in the same field and will give early spring grazing before the Bermuda has made a growth. If sown in the fall, wheat and hairy vetch make excellent winter grazing and also a good hay crop, if the stock is kept off after April 1. Winter oats and vetch furnish pasture for the spring months. Vetch and Johnson grass may occupy the same field without interfering with each other, for vetch will furnish grazing during late winter and early spring and then produce a crop of hay or seed. The first cutting of Johnson grass will be delayed a couple of weeks, but the yield for the season will not be reduced. Vetch may also be sown on Bermuda sod to furnish early spring grazing. For hay, fall oats may be sown and cut when in the dough stage. The land may then be disked and sown to cowpeas, to be cut for hay also. Lespedeza is valuable for both hay and pasture. Sorghum may also be utilized as a hay crop. Alfalfa does very well for the first season, and yields excellent returns, but the experience of the few who have tried it is that the stand the second year is so thin that they are not justified in keeping it. Some small plats of spring seedling were seen on the Memphis silt loam which looked very well and gave promise of good yields. Frost does not damage the plant here. Soils have been inoculated with the nitro-culture and with soil from an alfalfa field, and plats have been limed, but a permanent stand has not been secured. Comparatively few trials have been made, however, and it is suggested that more careful experiments be con-

ducted and close observations made, since only in this way can the cause of failure be discovered and successful methods of growing determined.

While tobacco was at one time a very important crop in this locality, it is not grown at all at the present time. It is suggested that this industry could again be established. Small patches should at first be planted, so that the growers could gradually become accustomed to handling the crop without suffering great loss should there be a failure. If it is desired to work on a larger scale tobacco experts from the Government or from some established tobacco-growing region could be secured to supervise the operations. The grade produced on this soil would not be the finest, but would nevertheless be of good quality.

If the Delta land is ever protected by a levee, the rice industry may be profitably undertaken in this portion of the county.

The area offers good opportunities for the dairy industry and also for the raising of beef cattle. The use of silos would be found profitable. Conditions are also favorable for the cheap production of pork, and hog raising should be engaged in to a much greater extent. Cowpeas, soy beans, peanuts, alfalfa, rape, sorghum, and clover can all be utilized advantageously in connection with hog raising.

The trucking industry is certain to be developed to considerable proportions, because the soil is so well adapted to many truck crops, the growing season is long, transportation facilities good, and those who have undertaken it have been successful. Potatoes, cabbage, and tomatoes are the chief truck crops at present, but a much larger variety could, and should, be grown. At Durant, Miss., strawberries are grown extensively on soil identical with large areas here, and there is no good reason why they could not be produced very profitably in Adams County. Such crops as onions, lettuce, asparagus, melons, peanuts, and sweet potatoes could also be grown. The Natchez district should take its share of the vast sums paid by the northern cities for their supplies of fresh vegetables of all sorts.

SOILS.

With the exception of a portion of Tishomingo County the whole of Mississippi lies within that physiographic division of the United States known as the Gulf Coastal Plain. This region was at one time covered by an extension of the Gulf of Mexico. Later, elevation of the earth's crust occurred, and as the floor of the extension rose above sea level various agencies, such as the waves, streams, and winds, produced marked differences in the surface. Of the numerous geological formations which contributed to the building up of the soils of Mississippi several are exposed in Adams County, but only three of these influence the soils.

The Lafayette is the oldest of the exposed formations. It is to be seen at the foot of the bluffs, in the beds of streams, and in many places where erosion has been severe. The material consists of red and yellow sand, gravel, and clay. After deposition portions of this material were eroded away, and the Port Hudson formation, which is very similar in texture and color, was laid down. It is contended by some authorities that much of the so-called Lafayette is in reality Port Hudson. Along the foot of the bluffs where these formations are exposed a quantity of sand has been washed out over the level land. This material, though of limited extent, has been mapped as St. Catherine sandy loam.

The loess which rests upon the Port Hudson forms the surface of about 80 per cent of the county. This is thought to have been deposited largely by wind, which transported silt and rock flour from the flood plains of rivers and from overwashed plains during glacial or interglacial epochs. The depth of this material varies from 10 to 60 feet, being greatest along the border of the river valley, where in conjunction with the underlying material it forms bluffs ranging in height from 100 to 200 feet. The loess extends eastward some distance beyond the county, gradually becoming thinner, and from Baton Rouge, La., northward far beyond the limits of Mississippi. Its most marked characteristics are its extreme smoothness and its ability to stand in perpendicular walls when portions are cut away by erosion. Throughout much of the loess deposit there are found many land shells belonging chiefly to the species *Helix*, *Helicina*, and *Pupa*. Lime nodules also are present. Some authorities hold that the loess of this region is underlain by the brown or yellow loam, while others maintain that the loam is above the loess. Still others state that the loess is but a phase of the loam and may be overlain as well as underlain by a loamy deposit. However this may be, the formation taken as a whole is so homogeneous that the soils derived therefrom have a marked uniformity in texture, color, and structure.

The loess as found in Adams County gives rise to two upland types—the Memphis silt loam and the Richland silt loam—and to one bottom-land type—the Lintonia silt loam. The last named occurs along the streams of the upland and at the foot of the bluffs bordering the Delta. It is both alluvial and colluvial.

The delta portion, which occupies about 20 per cent of the area of the county, consists of alluvium which has been deposited by the Mississippi River. The material is similar to that found throughout the flood plains of this great river.

The various soil types which have been recognized in the delta were deposited in standing or moving water, the speed of the current being the factor determining the texture of the resulting soil. When the river overflowed its banks there was a checking of the current

and the heaviest and coarsest particles were deposited. These particles accumulated until a low ridge was formed along the stream. Upon this ridge is found the Yazoo very fine sandy loam. As the flood waters spread out over the country adjacent to the river the current was further checked and the resulting soil was the Sharkey clay loam. When the water finally came to rest in the lowlands the finest particles were deposited and from these we get the Sharkey clay.

Between the Sharkey clay areas and the Lintonia silt loam at the foot of the bluffs is found a gradation type derived partly from the silt washed from the bluffs and partly from the river deposits. This has been called Sharkey silty clay loam. The material along the Homochitto River has been classified under the same head, though it differs slightly.

Immediately along the river are a number of sand bars which are constantly being built up or washed away from by the changing river currents. When these bars remain for a number of years they become covered with a growth of cottonwood trees and other vegetation. More soil is added by overflows, and in time the Yazoo very fine sandy loam is developed. The new sand bars and also the old ones have been outlined and designated as Riverwash, the old sand bars representing the intermediate state in the development of the Yazoo very fine sandy loam.

The following table gives the relative and actual extent of each of the several soil types found in the survey:

Areas of different soils.

Soil.	Acres.	Percent.	Soil.	Acres.	Percent.
Memphis silt loam.....	169,088	59.5	Riverwash.....	2,176	4.5
			Old sand-bar phase.....	10,560	
Sharkey clay.....	37,376	13.2	Sharkey clay loam.....	6,848	2.4
Lintonia silt loam.....	22,080	7.8	Yazoo very fine sandy loam ..	6,016	2.1
Richland silt loam.....	15,424	5.4	St. Catherine sandy loam.....	1,280	.4
Sharkey silty clay loam.....	13,312	4.7	Total.....	284,160	

MEMPHIS SILT LOAM.

The Memphis silt loam is the most extensive type in Adams County. The surface soil to a depth of from 6 to 10 inches consists of a light-brown or yellowish-brown friable silt loam of great uniformity. On the steep slopes and often along the tops of ridges the surface has been eroded and the soil is "thin," while along the lower slopes where the washed material has accumulated it is frequently from 18 to 20 inches deep. The average depth of soil, however, is about 8 inches. When wet the surface becomes slightly sticky, but when dry it is powdery and feels like flour.

The subsoil consists of a brown or light chocolate-colored friable silt loam or silty clay loam much more compact than the surface and always containing a higher percentage of clay. It is very uniform in texture and structure and the same material extends to a depth of from 10 to 60 feet.

The type is very easy to cultivate and a good seed bed can be secured with a minimum amount of labor. Where the surface has been eroded the exposed subsoil can be worked up and in a comparatively short time made to produce good crops.

Owing to the structure and composition of the soil its field behavior is very peculiar. Where deep cultivation is followed and there is a comparatively large amount of organic matter present the soil readily absorbs and retains moisture. Where shallow cultivation is practiced, as is most often the case, the soil packs and puddles during heavy rains and the water runs off. The rain waters carry away large amounts of soil and cut deep ravines and gullies in the slopes. The walls of these washed places are usually vertical and vary in height from 2 to 50 feet. Their peculiar structure enables them to stand for years, while the gullies are being cut deeper by each successive rainfall.

The Memphis silt loam occupies the greater part of the upland section of the county. Its continuity is broken only by the lowland along the streams and the gently rolling tracts of the Richland silt loam. The surface is rolling, broken, and hilly. It consists of a series of ridges and cross ridges, the slopes of which are often very steep and badly dissected by gullies. The more gentle slopes are also subject to erosion, and when ravines once start in an open field it is somewhat difficult to prevent more extensive washing. On account of the uneven topography the natural drainage is good.

The material from which the Memphis silt loam is derived consists of a deposit of loess from 10 to 60 feet deep. The thickness is greatest along the bluffs, the material gradually becoming thinner as the east side of the county is approached. The formation consists of unconsolidated yellow to brown or chocolate-colored silt, and the weathering of the exposed surface gives rise to the type under consideration.

Between Sandy Creek and the county line in the southeastern part of the area the surface is extremely broken, the loess is thinner than elsewhere, and on the slopes the underlying sands of the Lafayette are exposed to a limited extent. In this section the roads are very sandy, owing to the washing down of material from the eroded places, but the areas of sand actually exposed are so small that it was not considered advisable to indicate them in the map as a separate soil. The roads throughout this type are all deeply cut and the underlying sand, gravel, and clays are frequently exposed in all parts of the county.

The original timber growth consisted of a mixture of shortleaf pine, post, red, white, live, and water oak, hickory, gum, beech, sycamore, and magnolia. Most of the merchantable timber has been cut, though there are a few tracts of virgin forest left.

The Memphis silt loam is a good general farming soil and on the more gentle slopes all staple and truck crops commonly grown in this section are successfully produced. Many of the steeper slopes are also farmed with good results. Cotton yields from one-fourth to three-fourths bale per acre, with an average of one-third bale. The acreage under cultivation has been greatly reduced since the appearance of the boll weevil. Corn yields from 12 to 30 bushels, with an average of 18 bushels per acre. The acreage devoted to this crop is being extended rapidly at present and more attention is being paid to seed selection. Cowpeas do very well, but are not grown as extensively as they should be. Oats may be sown either in spring or fall, but the acreage is very small. Bermuda grass and Japan and bur clover grow very well and furnish pasture and some hay. No definite crop rotation is followed, though it is customary to sow cowpeas in the corn at the last cultivation.

The methods of cultivation followed are similar to those employed throughout this region. Shallow plowing with ridged cultivation and too infrequent harrowing are conspicuous faults which should be corrected. Since the appearance of the boll weevil large tracts of land have been abandoned and much of it is being allowed to wash. Commercial fertilizers are used to a limited extent on the land still under cultivation. Phosphoric acid and cottonseed meal give best results.

This type where run down is capable of being developed to a higher state of productivity with less labor than most impoverished soils. To improve the physical condition the depth of plowing should be gradually increased and the after-cultivation should be more thorough. Level culture should be practiced, for when the soil is thrown up in ridges it rapidly loses its moisture. Instead of planting cotton or corn continuously on the same field a definite crop rotation should be followed. Oats may be sown in the fall and when this crop is harvested cowpeas should be sown and cut in the fall for hay. The ground should then be deeply plowed and rye or a similar crop put in to keep the ground covered and furnish winter pasturage. In the spring the rye may be turned under and cotton planted. The field should be kept clean and, after picking, all the stalks should be burned and the field again plowed and a cover crop put in. The following spring corn may be planted and cowpeas sown at the last cultivation. The next year the field may be allowed to grow up to grass for pasture. By following this rotation or a similar one the productiveness of the soil will be increased and the land will not

wash as badly as under the present system, where the fields are bare for most of the year. Green manuring may be practiced with good results and whenever stable manure can be obtained it should be liberally applied.

The forested hillsides should be allowed to remain in timber. Those from which the trees have been cut should never have been cleared, as erosion is thus increased. Some of the slopes could be reforested, while on those farmed the greatest care should be exercised to prevent washing. Bermuda grass forms a close sod and holds the surface soil better than other grasses grown here. It can be utilized to advantage on the hillsides. In cultivated fields contour cultivation should be followed and the contours accurately laid out. That system of farming should be followed which will insure the incorporation of a large amount of organic matter, deepen the surface soil, and make it capable of absorbing and retaining large amounts of moisture.

Farms on this type range in value from \$5 to \$35 an acre, with an average of about \$10.

The following table gives the average results of mechanical analyses of samples of this soil and subsoil:

Mechanical analyses of Memphis silt loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
23563, 23565.....	Soil.....	0.0	0.0	0.1	0.3	1.6	83.8	14.0
23564, 23566.....	Subsoil.....	.0	.0	.1	.1	2.2	72.8	24.7

RICHLAND SILT LOAM.

The surface soil of the Richland silt loam, to a depth of from 10 to 14 inches, consists of a brown or light-brown friable silt loam. The subsoil is a light chocolate brown silt loam more compact and containing a higher percentage of clay than the surface. Both soil and subsoil are remarkably uniform. The type is easily cultivated and works up readily into a mellow seed bed.

The Richland silt loam is confined to the hill section of the county. The largest area mapped lies between Kingston and the Homochitto River in the southern part of the county. Another tract lies directly east from Natchez on both sides of St. Catherines Creek. Other smaller occurrences are found throughout the county, bordering the lowlands along St. Catherines, Second, Sandy, and Coles Creeks.

In topography the type varies from nearly level to undulating and gently rolling. The natural drainage is good, except in a few small depressions in the level tracts. In these places tile drains could be used to good advantage.

In derivation, texture, and structure this type is identical with the Memphis silt loam, from which it differs only in topography and depth of soil. On account of its less broken surface it is not badly eroded; the surface soil is deeper. It is more easily worked and therefore slightly better cultivated, which results in somewhat higher yields. For these reasons its agricultural value is greater and the separation justifiable.

Cotton and corn have long been the leading crops. Under normal conditions cotton will average one-half bale and corn from 18 to 25 bushels per acre. Since the advent of the boll weevil the farm practices have changed somewhat. The cotton acreage has been greatly reduced and the acreage in corn increased. Upon this type, in conjunction with the Lintonia silt loam, a thriving trucking industry is being built up. Up to this time potatoes and cabbage have been the leading crops. Potatoes yield from 150 to 300 bushels per acre and cabbage from 120 to 175 crates of 100 pounds each per acre. Many truck crops will do very well on this soil and it offers excellent opportunities for the extension of the trucking industry. Strawberries, beans, peas, lettuce, tomatoes, asparagus, sweet potatoes, and a number of other vegetables could be produced profitably.

Commercial fertilizers are used in growing truck crops. A mixture of equal parts of acid phosphate and cottonseed meal applied at the rate of from 800 to 1,200 pounds an acre is giving good results with potatoes and cabbage. On the parts of the type where general farming is practiced, it is recommended that a systematic crop rotation similar to the one suggested for the Memphis silt loam be followed. The soil should be plowed deeper and given more thorough after cultivation. Care should be taken to keep the gentle slopes from washing.

Where trucking is carried on, farms of this type range in value from \$30 to \$100 an acre, depending on the location. Over the remainder of the type the range in value is from \$10 to \$25 an acre.

The following table gives the average results of mechanical analyses of samples of the soil and subsoil of this type:

Mechanical analyses of Richland silt loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
23567, 23569.....	Soil.....	0.0	0.0	0.2	0.3	2.3	82.9	14.1
23568, 23570.....	Subsoil.....	.0	.1	.1	.4	2.8	75.1	21.3

LINTONIA SILT LOAM.

The surface soil of the Lintonia silt loam, to a depth of from 10 to about 16 inches, consists of a light-brown or sometimes slightly yellowish friable silt loam. The subsoil to a depth of 36 inches or more consists of a yellowish-brown friable silt loam containing a moderate percentage of very fine sand and sometimes grading into a very sandy loam at about 30 inches. Along some of the streams throughout the upland portion of the county the soil contains less very fine sand than is usually found in the areas bordering the delta, and the subsoil is a heavy silt loam or sometimes a silty clay loam. With this exception the type is very uniform. It is easy to cultivate and a fine seed bed can be secured with comparatively little labor.

The Lintonia silt loam is most typically developed along the foot of the bluffs bordering the delta, though it is also found along the streams of the upland. In places the type occupies very gentle slopes having the appearance of stream-graded terraces, the soil having been deposited as colluvial and alluvial material over the graded down slopes. An area about 7 miles long by 1 mile wide extends to the northeast and southwest from Anna, in the northern part of the county. Another important tract lies south of Natchez, where St. Catherine's Creek flows into the Mississippi River. Other smaller areas are found along the foot of the bluffs. This soil is also found as bottom land along the streams of the upland, and of these the occurrences along St. Catherine's, Second, Sandy, and Coles Creeks and Homochitto River are the most important.

In topography the surface is nearly level, with only a slight decline toward the delta proper or the streams along which it occurs. This slope is usually sufficient to carry off the surface water, but on some of the level areas the water table is too near the surface for best results in farming, and in such places tile drains or open ditches could be constructed to advantage. It is thought sufficient fall could always be secured to prevent the tile filling with silt.

In origin the Lintonia silt loam is both alluvial and colluvial. The portion found at the foot of the bluffs is largely colluvial, having been washed down from the loess formation. Along the upland streams it is partly alluvial, having been influenced by water currents at some past time. The bed of nearly all the streams is deeply cut, so that the type is not subject to overflow except at a few points in the delta, where it occurs very near the Mississippi River. One such place is at the mouth of St. Catherine's Creek. The proportion subject to overflow is very small. The stream phase not being subject to overflow, occupies practically the same position as second bottom lands.

Practically all of the type is cleared and has been cultivated, but during the last two years, owing to the advent of the boll weevil and the consequent reduced acreage of cotton, much of it has been allowed

to lie idle. The methods of culture followed upon it have been and are now similar to those used on other soils—very shallow plowing and inadequate after-cultivation.

The Lintonia silt loam is naturally a productive and very desirable soil, but owing to the lax methods followed, the yields usually obtained are hardly a fair index of its real value. Under normal conditions cotton will average one-third to one-half bale per acre and corn 20 bushels per acre. Yields of 1 bale of cotton and 40 bushels of corn per acre are not uncommon. By using better methods the average production could be greatly increased.

The Lintonia silt loam is a very good truck soil and should be devoted largely to this industry. When properly drained Irish potatoes and cabbage, the chief truck crops now grown, do very well. Potatoes yield from 150 to 300 bushels and cabbage from 125 to 175 crates of 100 pounds each per acre. Acid phosphate and cottonseed meal in equal parts are applied at the rate of from 800 to 1,200 pounds per acre for these crops. Tomatoes, beans, peas, strawberries, lettuce, sweet potatoes, and many other vegetables could be successfully raised and the trucking industry should be extended as rapidly as possible.

Where general farming is practiced a systematic crop rotation should be followed and those given elsewhere in this report will apply to this type. Plowing should be more thorough and aftercultivation more frequent. More organic matter should be added to the soil by plowing under green crops and by growing legumes. Such practice will assist materially in bringing the type to a higher state of productiveness.

As found throughout the county, the soil ranges in value from \$10 to \$50 an acre, the maximum representing the price in areas where trucking is being developed. The average value of the land is about \$20 an acre.

The following table gives the average results of mechanical analyses of samples of the soil and subsoil:

Mechanical analyses of Lintonia silt loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
23559, 23561.....	Soil.....	0.1	0.2	0.1	0.6	5.9	85.9	7.1
23560, 23562.....	Subsoil.....	.0	.1	.1	.3	14.1	79.2	6.1

The following samples contained more than one-half of 1 per cent calcium carbonate (CaCO_3): No. 23561 9.81 per cent; No. 23562, 11.38 per cent.

ST. CATHERINE SANDY LOAM.

The surface soil of the St. Catherine sandy loam consists of about 10 inches of medium to fine sandy loam or sand of a yellowish or yellowish-brown color. The subsoil, to a depth of 36 inches or more,

is usually of the same texture, though in a few instances it grades into a sticky sandy loam at 30 inches. There is sometimes a small quantity of gravel present in both soil and subsoil, but never sufficient to make the type a gravelly loam.

The St. Catharine sandy loam is of very limited extent and of little importance. It occurs immediately at the foot of the bluffs as a narrow strip from a few rods to one-fourth mile in width, but is not continuous. A small area is found north of Natchez at the base of Cow Pen Point. Another area of greater extent occurs several miles south of Natchez.

In origin the St. Catherine sandy loam is derived from wash from the Lafayette and Port Hudson formations, which are frequently exposed under the loess at the foot of the bluffs. The surface has a gentle decline toward the delta proper and the natural drainage is good. On account of its loose open nature the soil is apt to be droughty during long dry spells.

But little of this type is under cultivation. Where it is farmed the yields are low. If strongly fertilized and properly cultivated early truck could be successfully grown. Because of its limited extent no samples of this soil were taken for analysis.

YAZOO VERY FINE SANDY LOAM.

Where typically developed the surface soil of the Yazoo very fine sandy loam consists of 10 to 16 inches of brown, light-brown, or drab-brown fine sandy loam, containing varying amounts of silt. The subsoil is a heavy fine sandy loam grading into a dark-drab heavy loam or silty loam, which in turn passes into a silty clay loam containing considerable fine sand or into a sandy clay loam of a drab or slightly mottled appearance, extending to a depth of 36 inches or more.

Owing to the variable formative agencies which have contributed to the building up of this material, and to the limited extent of each variation, it has been necessary to include several phases under the one type. Where the Yazoo very fine sandy loam grades into the heavier soils it becomes a loam, and where it borders old river channels it is frequently a fine sand, but slightly loamy. The type is easily cultivated and is a very desirable soil.

This character of soil occupies the highest parts of the delta proper in the form of a low ridge or series of low ridges along the river front. There is a gentle decline toward the lowlands back from the water course. In times of low or only moderately high water the natural drainage is good, but during very high floods the entire type is submerged to a depth of 3 to 5 feet. When the river is at the 47-foot stage at Natchez practically all of the front lands are covered with water. The largest tracts of this type are in the vicinity of Arnot and Briers. The entire area of the soil does not exceed 4 square miles.

In origin the soil is alluvial, the material representing the coarsest particles deposited by the river. It is being added to at some points and washed away at others by each succeeding overflow.

The type is more easily cultivated than the other delta soils, is less liable to be flooded, and, while yields are not so large, it is usually preferred to the heavier soils. Under normal conditions corn yields 20 bushels per acre and cotton one-half bale. All this soil has been cultivated, but since the increased danger from floods on account of the construction of levees on the Louisiana side and the ravages of the boll weevil a large part of it has been left idle. It is naturally well adapted to cabbage, potatoes, peanuts, and all truck crops, and if protected by a levee would be a very valuable soil. The estimated value under present conditions is very low, probably less than \$10 an acre.

The following table gives the average results of mechanical analyses of samples of this type:

Mechanical analyses of Yazoo very fine sandy loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
23573, 23575.....	Soil.....	0.0	0.0	0.0	12.3	51.4	28.2	8.0
23574, 23576.....	Subsoil.....	.0	.0	.0	3.4	25.6	54.7	16.2

The following sample contained more than one-half of 1 per cent calcium carbonate, (CaCO₃): No. 23573, 2.29 per cent.

SHARKEY SILTY CLAY LOAM.

The surface soil of the Sharkey silty clay loam, where typically developed, consists of a brown or yellowish-brown silt loam to silty clay loam extending to a depth of 10 to 12 inches, and sometimes mottled faintly with rusty brown spots. The subsoil, to a depth of 36 inches or more, is a drab, light-brown, or yellow silt loam, silty clay loam, or heavy, very fine sandy loam, sometimes mottled with rusty brown and drab, and in places bluish gray. A heavy phase consists of clay loam having a dark-brown or nearly black surface soil 10 inches deep, underlain by a yellow, very fine sandy loam. In places near the boundary of the Lintonia silt loam the soil to a depth of 4 to 10 inches is a silty clay loam, while the subsoil is a true silt loam, which at variable depths grades into mottled clay, like the subsoil of the Sharkey clay.

The Sharkey silty clay loam represents a gradational type between the silty soils washed down from the loess and the heavy soils deposited by the Mississippi River. It is strictly alluvial and consists in its typical development mainly of material washed from the loess or its derivative types.

There is a gradual change on one side toward the Sharkey clay, the content of loessial material diminishing and that of the alluvial

material giving rise to the Sharkey clay increasing. The line of separation is rather indistinct in places.

The largest area of the type is found along the Homochitto River, where it is all swampy. The bed of this river is very shallow, and in times of heavy rains the extensive lowlands are always overflowed. Quantities of sand and silt are deposited frequently, and these accumulations have killed much of the timber. An area representing the heavy phase extends from Hutchings Landing southward to the Homochitto River. This is within the delta and represents a gradation between the heavy soils deposited by the Mississippi River during floods and the material washed down from the loess of the uplands. Another strip occurs in the north end of the county between the areas of Sharkey clay and Lintonia silt loam. A portion of this area is cultivated and yields an average of one-half bale of cotton and 20 bushels of corn per acre in normal seasons. The entire type is overflowed annually, and during some seasons much of it is flooded several times, so that there is considerable risk involved in cropping it. With protection from overflow by diking excellent yields of cabbage and a number of other crops, such as grass and sugar cane, could probably be secured. Rice would do well. The timber growth consists principally of cottonwood, box elder, willow, sycamore, and maple.

As the delta phase is a gradation soil and therefore quite variable, and as the main portion of the type along the Homochitto River is also changing constantly by successive overflows and deposition of sand and silt, samples would not represent the true condition, and therefore none were taken.

SHARKEY CLAY.

The surface soil of the Sharkey clay to a depth of 6 inches consists of a grayish-brown clay or silty clay loam. The subsoil consists of a mottled blue, drab, and brown plastic clay, which is very heavy, stiff, and impervious. When dry and exposed to the sun the surface cracks, and on account of the small divisions into which it separates it is locally known as "buckshot land." Owing to its close, compact structure it is more difficult to cultivate than any of the other soils of the area.

The type occupies the greater proportion of the delta and next to the Memphis silt loam is the most extensive soil in the survey. The largest area lies in the southwestern part of the county between the Mississippi and Homochitto Rivers and the bluffs. Another tract is found in the bottom between Natchez and Hutchings Landing, while a third area, though not typical, occupies a large part of Cow Pen Point north of Natchez. In the extreme north end of the county along the old river channel is another considerable tract of Sharkey clay.

The surface is level with only a few irregularities caused by erosion and deposition in times of floods when currents cut from one channel to another. The type is lower than any of the other soils, and lies but little above the level of the water in the streams. On account of this position, its level surface, and compact structure the natural drainage is poor, and it is commonly spoken of as swamp.

The Sharkey clay is alluvial in origin, having been deposited by the quiet flood waters of the Mississippi River which come to rest in the large catchment basins of the lowlands. The soil represents the finest particles held in suspension by the water.

Only a small amount of this soil is under cultivation. In the vicinity of Kienstra enough has been done to demonstrate the fact that it is a very strong soil. The greater part of the type is still in forest and the timber growth consists of overcup, cow, red, white and water oak, gum, sycamore, and ash, with cypress in the sloughs.

The entire type is subject to overflow annually. There is no levee protection and during high water it is covered to a depth of from 6 to 12 feet. Levees could be constructed and drainage systems established for this and other soils of the delta, but would be an expensive undertaking and individual interests are difficult to unite on such a project; this one in particular, since there is danger of still higher water if the Red River is divorced from the Mississippi, as is now being advocated.

The soil is naturally productive and yields of 1 bale of cotton per acre were common on the portion cultivated. Practically all of the type is now lying idle and its value depends only on the character of the standing timber.

The following table gives the results of mechanical analyses of samples of the soil and subsoil:

Mechanical analyses of Sharkey clay.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
23571.....	Soil.....	0.0	0.1	0.1	0.5	0.5	49.6	49.2
23572.....	Subsoil.....	.0	.1	.1	.4	3.6	49.8	45.9

SHARKEY CLAY LOAM.

The surface soil of the Sharkey clay loam, to a depth of from 10 to 14 inches, consists of a dark-brown to nearly black heavy loam to light clay loam. The subsoil is often a heavy very fine sandy loam, loam, or silt loam of lighter color than the soil, grading frequently at 24 to 30 inches into a plastic clay loam or clay mottled drab and bluish with some brown or reddish-brown splotches. Along the boundary where the type joins the Sharkey clay, the soil grades directly into a plastic clay loam or clay subsoil usually mottled drab

or bluish and brown or reddish brown, but over much of the type the subsoil is a loam or very fine sandy loam. The type is a gradation between the Yazoo very fine sandy loam of the river front and the Sharkey clay of the swamp and is therefore subject to considerable variation. The lighter phases described undoubtedly comprise a considerable total of fairly good Yazoo soil occurring in such intricate association with the dominant phase of the type as practically to prevent separation on the map.

This soil is more difficult to cultivate than the Yazoo very fine sandy loam, but not so refractory as the Sharkey clay. It is of small extent, there being less than 6 square miles in the county. The largest area is in the southwestern part of the survey between Arnot and Kienstra. Another tract lies due south from Briers, while a third begins about 2 miles south of Carthage and extends in a narrow band about 6 miles farther south. More of the soil occurs on Fairchilds Island.

The topography consists of low ridges separated by sloughs or it may be nearly level with only a gentle slope toward the Sharkey clay. It is slightly lower than the Yazoo very fine sandy loam, but a little higher than the Sharkey clay. Under normal conditions the natural drainage is adequate.

In origin the Sharkey clay loam is entirely alluvial, having been deposited by the Mississippi River in times of flood. As none of the land is protected by levee it is subject to overflow annually and damage to crops often results.

Practically all of the type is cleared and has been farmed. While subject to overflow, a late crop of cotton could always be secured until two years ago, when the boll weevil appeared. Now a late crop is impossible and as a result most of the type is lying idle. The Sharkey clay loam was the most desirable of the delta soils. The yields were always very satisfactory, cotton giving an average yield of three-fourths bale per acre, with a yield of 1 bale per acre not uncommon. Corn averages 25 bushels, with yields often as high as 40 bushels per acre. Under good seasonal conditions and with protection against insects cabbage gives good results. Sugar cane, rice, and grass would do well under proper conditions of drainage—conditions that could be controlled by leveling, diking, and ditching.

No commercial fertilizers have ever been used and the methods of cultivation have always been rather crude. The type is naturally strong and very productive. It is well adapted to all general farm crops, and if protected by levees every acre could be cultivated and made to bring good yields with little or no fertilization.

Under prevailing conditions farming is so hazardous that the value of the land is low and difficult to estimate, as there is no demand for it. It could be purchased, together with other types in the same condition, for less than \$10 an acre.

The following table gives the results of mechanical analyses of samples of this soil and subsoil:

Mechanical analyses of Sharkey clay loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
23577.....	Soil.....	0.0	0.0	0.1	2.0	22.8	57.1	18.0
23578.....	Subsoil.....	.0	.1	.1	1.5	43.1	41.2	14.2

RIVERWASH.

Under this head are included those deposits of the Mississippi River which are so recent that but little or no growth has developed upon them. The stream makes numerous bends throughout its course. Where the lowland borders the river in the form of a concavity the current is usually close to the shore and the bank is gradually being eaten away. Where the land front is convex the water near the shore is nearly quiet, the main current is close to the opposite bank, and as a result the coarse particles are deposited by the quiet or slowly moving water. The river is constantly at work carrying away the bank from some point and depositing the material at another. As each flood recedes some new sand bars may be seen or old ones may have been extended. The currents are constantly shifting, so that an area now occupied by a sand bar or some other type of soil may in the course of a few years be cut by the main channel of the river.

As found here the Riverwash consists of medium to fine sand and silt. By each succeeding overflow the bars are built a little higher, and in time only the highest floods cover them.

The largest bars outlined occur on Cow Pen Point and just below Briers and Jacksons Point.

Riverwash, old sand-bar phase.—This phase represents an intermediate stage in the building of alluvial soil between Riverwash and the Yazoo very fine sandy loam. The texture of the material is very similar to that of Riverwash, except that it contains a small amount of organic matter from the decay of grasses and thus is slightly loamy. The formation is sufficiently old and fixed to support a growth of cottonwood and willow. In some places gum is plentiful, while cypress is found in the sloughs. In elevation it is a little higher than Riverwash, but not usually quite as high as the Yazoo very fine sandy loam. It is flooded each year, and cross currents have eroded the surface into a series of low ridges.

In the course of time, when the river has built this formation a little higher and the forests are cleared and the land cultivated, conditions will be similar to those on the light phase of the Yazoo very fine sandy loam.

The old sand-bar phase borders the river at some places; at other points it grades into new bars now in course of building. Just below Hutchings Landing is one of the oldest bars mapped. More recent bars occur below Briers and Jacksons Point.

No part of the old sand-bar phase is cultivated, but the timber has considerable value.

As Riverwash has no agricultural value no samples were taken for analysis.

SUMMARY.

Adams County lies in the southwestern part of Mississippi and comprises an area of 444 square miles, of which one-fifth is within the "Delta" and the remainder in the "Hill" section. The river bottom or delta is nearly flat, while the surface of the upland varies from level to hilly and broken.

The first settlement was made in the area by the French in 1716. In 1797 the Americans took possession of the territory. Natchez, with a population of 16,000, situated on the bluffs overlooking the river, is the county seat. Three railroads—the Yazoo & Mississippi Valley, Mississippi Central, and the New Orleans & Northwestern—afford excellent transportation facilities. By rail Natchez is 98 miles from Jackson, 217 from Memphis, Tenn., and 214 from New Orleans.

The mean annual temperature is 66°, and the rainfall of 50½ inches is well distributed throughout the year. The climate is healthful, especially in the uplands; the winters are mild and the summers long and warm.

Agriculture is in a transitory stage. Cotton has been the main money crop for over 100 years. In 1908 the boll weevil appeared and destroyed the crop of that year and that of 1909. As a result fully half of the colored population has left the county, large tracts of land have been abandoned, the cotton acreage is greatly reduced, and more corn is being raised. Not enough corn, oats, hay, and meat are produced to supply the home demand.

The trucking industry has been started and gives promise for the development of this region. The soil is well adapted to all truck crops. Cabbage, Irish potatoes, and tomatoes are the chief truck crops at present. A canning factory has been established in Natchez and a meat-packing plant is being constructed. These will furnish a cash market for all live stock.

Land is held in large tracts. Some of these are being subdivided and sold for truck growing or general farming. Shallow plowing, ridge cultivation, and other unsatisfactory practices have long been followed, and the soil in many places has been allowed to wash badly.

Land in the delta is not protected by levees, and its value is less than \$10 an acre. In the upland values range from \$5 in the rougher

portions to \$100 an acre in the level or gently rolling trucking districts. There is much good land that can be purchased for from \$15 to \$30 an acre.

The soils of the upland have been derived from the loess, which covers a large area in the State. The most marked characteristics of this formation are its great uniformity and extreme smoothness.

The most extensive type in the county is the Memphis silt loam. The surface is rough and broken and in many places badly eroded. The loess from which this soil is derived extends to a depth of from 10 to 60 feet.

The Richland silt loam has the same origin as the Memphis silt loam and is also confined to the hill section. Its surface is nearly level to gently rolling, and it is not as badly eroded as the former type. It is well adapted to all truck crops, and the trucking industry is being developed upon it.

The Lintonia silt loam is found along the streams of the upland and at the foot of the bluffs in the delta. It is chiefly a wash from the loess slopes and is a distinct type. It is fairly well drained, only small portions of it are subject to overflow, and it is capable of being highly developed. A small amount of trucking is being done upon it.

The St. Catherine sandy loam is a very limited type derived from the sand washed from the Lafayette and Port Hudson formations exposed at the foot of the bluffs.

The Sharkey silty clay loam occurs chiefly in the swamp along the Homochitto River, and on account of numerous floods, which deposit new material at frequent intervals, it is subject to considerable variation. A heavy phase is found as a gradation soil between the Sharkey clay and the Lintonia silt loam.

The soils of the delta proper are all of alluvial origin, having been laid down by the Mississippi River in times of high water. The Yazoo very fine sandy loam occupies the long, low ridges which border the river and form the front lands.

The most recent deposits of the river were recognized and mapped as Riverwash. The old sand-bar phase of Riverwash, as shown on the map, represents a gradation between Riverwash and the Yazoo very fine sandy loam, into which it develops in course of time.

The Sharkey clay loam lies adjacent to the Yazoo very fine sandy loam and is a gradation from it to the heavy Sharkey clay. It is a very good soil when protected by levee and properly worked.

The Sharkey clay occupies the lowest parts of the delta, and is locally known as "swamp." The soil is extremely heavy. It is very productive when cultivated, though it is difficult to handle. Its present value depends upon the timber growth, which is usually heavy.

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